EML RESEARCH REPORT NO. 3

BIBLIOGRAPHY
on
OPTICAL INFORMATION AND DATA PROCESSING

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CONTENTS

I. INTRODUCTION

Review of the literature on optical information and data processing shows that the volume of publications actually is larger than expected. The reason for this is the fact that the working field is not very new and that its concepts and methods were known for about twenty years, particularly in the specialized areas of photography and microscopy. A drastic increase of importance and volume, however, can be observed at the time of discovery of the generation of highly coherent light beams by lasers. The following rediscovery of holography additionally contributed to a considerable amount of new literature.

The large volume of publications makes literature search in this subject area difficult. This is accentuated by the fact that the titles may not adequately describe the content. This situation prompted the authors to prepare the present bibliography which, hopefully, will assist those working in this subject area to locate quickly literature pertinent to a specialized subsubject. The subdivision of the whole subject area into a sufficiently large number of subtopics with the articles listed under these is supposed to accomplish this in part. Simultaneously the length of abstracts was reduced to a bare minimum for adequately describing the content. Abstracts were omitted when the titles provided sufficient information on the content.

The bibliography is by no means complete. It contains publications of the open literature only since technical reports

by agencies and companies are often difficult to obtain. On the other hand, it is felt that this bibliography contains the essential articles representative for the various subtopics. The listed publications and their bibliographies in turn may lead to additional titles of interest.

A very few books on the subject and valuable information for study are listed on page 5. The list probably should contain more titles on optics, electromagnetics, and communication theory but it was kept to a minimum assuming familiarity with these subject areas from regular college course work.

The list of publications beginning on page 7 is organized in the following manner:

(1) The total field was subdivided into 22 subtopics indicated as headings of the groups and on each page in the upper right-hand corner.

(2) The articles in each group appear in subgroups listed by the year of publication in inverse chronology with the current year at the beginning.

(3) Within the yearly groupings, the articles are listed alphabetically by authors.

Additional information considered useful was also included. It consists of a list of periodicals with abbreviations on page 3, a list of the affiliations of the authors which shows where work is going on, and a list of principal manufacturers of optical components and equipment.

II. LIST OF PRINCIPAL PERIODICALS WITH ABBREVIATIONS

(Abbreviations taken from the "World List of Scientific Periodicals")

Publications	Abbreviations
Applied Optics	Appl. Optics
IBM Journal of Research and Development	IBM J. Res. Dev.
IEEE Spectrum	IEEE Spectrum
IEEE Transactions on Information Theory (Formerly I.R.E. Trans. Inf. Theory)	IEEE Trans. Inf. Theory
IEEE Transactions on Microwave Theory and Techniques (Formerly I.R.E. Trans. microw. Theory. Tech.)	IEEE Trans. Microwave Theory & Tech.
IEEE Internationsl Convention Record (Formerly I.R.E. int. Conv. Rec., I.R.E. natn. Conv. Rec., or I.R.E. Conv. Rec.)	IEEE int. Conv. Rec.
Japanese Journal of Applied Physics	Jap. J. appl. Phys.
Journal of Applied Physics	J. appl. Phys.
Journal of the Optical Society of America	J. opt. Soc. Am.
Journal of the Society of Motion Picture and Television Engineèrs	J. Soc. Motion Pict. Telev. Engrs.
Nature (London)	Nature, Lond.
Photographic Science and Engineering	Photogr. Sci. Engng.
Proceedings of the IEEE (Formerly Proc. I.R.E.)	Proc. IEEE

Publications	Abbreviations
Proceedings of the Institution of Electrical Engineers	Proc. Instn. Elec. Engrs.
Proceedings of the Royal Society	Proc. R. Soc.

III. BOOKS

M. Born & E. Wolf	"Principles of Optics."	Pergamon Press, London, 1964
E. B. Brown	"Modern Optics."	Reinhold Publ. Co. New York, 1965
	"Applied Optics and Optical Engineering," edited by R. Kingslake. Vol. I-V	Academic Press, New York, 1965
M. Kline & I. W. Kay	"Electromagnetic Theory and Geometrical Optics."	Interscience Publ., John Wiley & S., Inc. 1965
	"Progress in Optics," edited by E. Wolf. Vol. I, 1961; Vol. II, 1963; Vol. III, 1964.	John Wiley & Sons, Inc.
P. M. Duffieux	"L'integrale Fourier et ses applications à l'optique."	Facultec des Sciences, Besancon, 1946
L. Mertz	"Transformations in Optics."	John Wiley & Sons,Inc. 1965
G. W. Stroke	"An Introduction to Coherent Optics and Holography"	Academic Press, New York, 1966
	Symposium on "Optical and Electro-Optical Information Processing." (Mass. Inst. of Techn., Cambridge, Nov. 1964)	Mass. Inst. of Techn. Press Cambridge 1965
	Symposium on "Optical Processing of Information." (Office of Naval Research, Wash., D.C., Oct. 1962)	Spartan Books, Inc. Baltimore, 1963
	Symposium on "Communication and Information Theory Aspects of Modern Optics," edited by E. L. O'Neill. (General Electric Electr. Lab, Syracuse, June 1960)	General Electric Co. Electronics Lab Syracuse, New York

IV. B I B L I O G R A P H Y

Subtopics

Applications

Coherence

Correlation Analysis

Correlation Processing (Filtering)

Detection

Diffraction

Electromagnetics

Filtering, (Spatial Frequencies)

Fourier Transform

Fresnel Transform

Holography

Interferometry

Laser

Matched Filtering

Miscellaneous

Modulation

Optical Information and Data Processing

Pattern Recognition

Photography

Sources

Systems

Television

Applications

1966

D. C. Beste E. N. Leith	"An Optical Technique for Simultaneous Beam Forming & Cross Correlation" (Use of an optical correlator for antenna array simulation).	IEEE Trans. Aerospace 2, 376 - 384 July 66

1965

Powell Stetson	"Interferometric Vibration Analysis by Wavefront Reconstruction"	J. Opt. Soc. Am. 55, 1593 Dec. 65

1956

G. Toraldo de Francia	"Directivity, Super Gain, and Information" (Comparison of some aspects of antenna theory and the optical theory of resolving power. Information content is discussed in relation to directivity).	IRE Trans. Antennas and Prop. 4, 473 - 478 July 56

Coherence

1966

R. Barakat	"Theorem in Coherence Theory" (Coherence requires monochromaticity).	J. Opt. Soc. Am. 56, 739 - 740 June 66
R. E. Kinzly	"Images of Coherently Illuminated Edged Objects Formed by Scanning Optical Systems" (Elimination of "ringing" in coherent immages).	J. Opt. Soc. Am. 56, 9 - 11 Jan 66
C. W. McCutchen	"Generalized Source & the Van Cittert-Zernike Theorem: A Study of the Spatial Coherence Required for Interferometry"	J. Opt. Soc. Am. 56, 727 - 733 June 66
R. H. Shore, et al	"Diffraction by Apertures Illuminated with Partially Coherent Light" (Relation of mutual coherence function to diffraction pattern is developed).	J. Opt. Soc. Am. 56, 733 - 738 June 66

1965

R. E. Kinzly	"Investigations of the Influence of the Degree of Coherence Upon Images of Edge Objects"	J. Opt. Soc. Am. 55, 1002 - 1007 Aug 65
R. E. Williams	"Partially Coherent Processing by Optical Means" (Treatment of signals whose duration exceeds coherence time of source).	IEEE Trans. Inf. Theory 11, 499 - 507 Oct 65

1964

G. O. Reynolds T. J. Skinner	"Mutual Coherence Function Applied to Imaging through a Random Medium" (Effect of medium is shown to be that of a low pass filter).	J. Opt. Soc. Am. 54, 1302 - 1309 Nov 64

1963

H. Gamo	"Matrix Treatment of Partial Coherence"	Prog. in Opt.III 187 - 332 1963

1962

W. H. Steel	"Transfer Function in Partially Coherent Light"	Symp on: Comm. & Inf. Theory Asp. of Mod. Opt. 91 - 114 1962

1959

G. B. Parrent	"Studies in the Theory of Partial Coherence" (Derivation of coherence properties of various sources).	Opt. Acta. 6, 285 - 296 July 59
W. H. Steel	"Scalar diffraction in terms of Coherence" (The diffraction relations for a partially coherent source).	Proc. Roy. Soc. London A, 249, 574-588 Feb. 59

1955

E. Wolf	"A Macroscopic Theory of Interference & Diffraction of Light from Finite Sources. I. Fields with a narrow spectral range" (Discussion of coherence factor in optics).	Proc. Roy. Soc. London A, 225, 96-111 Aug 55

1951

H. H. Hopkins	"The Concept of Partial Coherence in Optics" (Definition of a "phase coherence" factor).	Proc. Roy. Soc. London A, 208, 263-277 Aug 51

1966

C. S. Weaver J. W. Goodman	"A Technique for Optically convolving two functions" (Letter)	Appl. Optics 5, 1248 - 1249 July 66
J. T. Ator	"Image velocity sensing by optical correlation" (Measuring the velocity of a moving image by parallel-slit spatial filter treated as continuous optical correlation processing).	Appl. Optics 5, 1325 - 1331 Aug 66

1957

H. Kubola H. Okzu	"Method of Measurement of Response Function by Means of Random Chart" (Measurement of spatial frequency response of an optical system by means of white noise).	J. Opt. Soc. Am. 47, 666 - 667 July 57

1955

H. H. Hopkins	"Transparent Fibers for the transmission of optical images" (Summary of earlier experiments. Treatment of the mechanism of transmission of light through the bundles).	Opt. Acta 1, 164 - 170 Feb 55
H. H. Hopkins	"The frequency response of a defocused optical system" (Calculations of characteristics of a defocused optical system of rectangular and circular aperture).	Proc. R. Soc. A231, 91 - 163 July 55

1965

D. E. Bode, et al	"Lead-Selenide detectors for intermediate temperature operation" (Recent advances in the detector technology for the 3μ to 5μ region. PbSe films with high performance at 195°K (dry ice)).	Appl. Optics 4, 327 - 331 Mar 65
W. D. Gunter, et al	"Enhancement of Photomultiplier Sensitivity by Total Internal Reflection"	Appl. Opt. 4, 512 - 513 Apr 65
C. W. Helstrom	"The Detection & Resolution of Optical Signals" (SNR of Detectors is determined).	IEEE Trans. Inf. Theory 10, 275 - 287 Oct 64 11, 125 Nov 65
R. A. Smith	"Detectors for ultraviolet, visible, and infrared radiation"	Appl. Optics 4, 631 - 638 May 65

1963

R. C. Jones	"Information capacity of Radiation Detectors and of Light"	Appl. Optics 2, 351 - 358 Apr 63

Diffraction

1966

D. Malacara	"Diffraction of a Plane Wavefront in an Afocal System" (Distortions in the wavefront are developed).	J. Opt. Soc. Am. 56, 14 - 15 Jan 66
F. Kottler F. M. Perrin	"Immagery of One-Dimensional Patterns" (Calculation of diffraction patterns of sinusoidal objects).	J. Opt. Soc. Am. 56, 377 - 388 Mar 66

1964

R. Barakat	"Application of the Sampling Theorem to Optical Diffraction Theory" (Calculation of optical transfer function from sampled values of point spread function).	J. Opt. Soc. Am. 54, 920 - 930 July 64
R. Barakat Houston	"Diffraction Effects of Coma" (Square and circular apertures treated).	J. Opt. Soc. Am. 54, 1084 - 1088 Sept 64
H. P. Greinel	"General Solution of the Diffraction Integral for a Rectangular Aperture in the Presence of Aberrations" (Aberrations are considered in the Bessel-Legendre expansion of the fields).	J. Opt. Soc. Am. 54, 32 - 37 Jan 64
A. I. Mahan, et al	"Far-Field Diffraction Patterns of Single Multiple Apertures Bounded by Arcs & Radii of Concentric Circles" (Computations verified by measurement).	J. Opt. Soc. Am. 54, 721 - 732 June 64

Diffraction

1961

R. Barakat	"The Intensity Distribution and Total Illumination of Aberration-Free Diffraction Images" (Presentation of Kirchhoff Diffraction theory).	Prog. in Opt. I 67 - 108 1961

1957

M. De	"An Interference Photometer for the Measurement of Amplitude Distributions in Diffraction Patterns" (Mach-Zender interferometer used to measure phase distributions in diffraction plane).	Opt. Acta. 4, 45 - 53 June 57

1956

R. Burtin	"Deux problemes de diffraction a grande oveture en optique" (Diffraction theory employed to describe wide aperture immages).	Opt. Acta. 3, 104 - 109 Sept 56

1954

E. Wolf E. W. Marchand	"Comparison of the Kirchloff and the Rayleigh - Sommerfeld theories of Diffraction at an Aperture" (Agreement is demonstrated for apertures large compared with illuminating wavelength).	J. Opt. Soc. Am. 54, 587 - 594 May 54

Diffraction

1953

H. H. Hopkins	"On the Diffraction Theory of Optical Immages" (Immage formation formulated mathamatically by considering coherence function in object plane, diffraction distribution, object structure).	Proc. R. Soc. London A, 217, 408-432 May 53

Electromagnetics

1966

R. Jacobsson	"Light reflection from films of continuously varying refractive index" (Theory of wave propagation in non-uniform layers).	Prog. in Opt. V 247 - 284 1966

1957

D. Canals-Frau	"Essal d'interpretation du comportement optique du filtre type Lippmann" (Lippmann filter is analyzed as an inhomogeneous dielectric).	Opt. Acta. 4, 121 - 124 Dec 57

Filtering (Spatial Frequency)

1965

J. D. Armitage, et al	"Absolute Contrast Enhancement" (The conditions necessary to justify application of modulation transfer theory to photographic masking are specified).	Appl. Optics 4, 445 - 451 Apr 65
C. J. Drane J. F. McIlvenna	"Application of spatial frequency concepts to the radar ground mapping problem" (Air Force Cambridge Research Laboratories, Office of Aerospace Research, L. G. Hanscom Field, Bedford, Mass.).	Appl. Optics 4, 1339 - 1345 Oct 65
A. Kozma D. L. Kelly	"Spatial Filtering for Detection of signals submerged in noise" (Matched filtering is described as a spatial filtering operation).	Appl. Optics 4, 387 - 392 Apr 65
I. O. Tannhauser	"Investigation of the influence of apodization on the sine wave response of photographic lenses"	Appl. Optics 4, 731 - 736 June 65

1964

D. B. Anderson	"Application of semi-conductor technology to coherent optical transducers and spatial filters"	Symp. Opt. & Electro-Opt. Inf. Process. 221 - 234 Nov 64
W. D. Montgomery	"The Extension to Probability Distributions for Detection Spatial Filters" (Filter design from probability distributions of signals).	IEEE Trans. Inf. Theory 10, 2 - 5 Jan 64

1964 - con't

A. Vander Lugt	"Signal Detection by Complex Spatial Filtering" (Presentation of a means of implementing a complex spatial fiber, i. e. one that possesses controlled phase as well as amplitude characteristics).	IEEE Trans. Inf. Theory 10, 139-145 Apr 64
A. Vander Lugt et al	"Character Reading by Optical Spatial Filtering"	Symp. on: Optical & Electro-Opt. Inf. Process. Tech. 1964

1963

P. J. van Heerden	"A new optical method of storing and retrieving information" (Develops the theory of the filter in the focal plane whose transmission at each point is proportional to the intensity of the light from the object).	Appl. Optics 2, 387 - 392 Apr 63
J. Tsujiuchi	"Correction of Optical Images by Compensation of Aberrations and by Spatial Frequency Filtering" (Correction of aberrations by: compensating spatial filter, double diffraction).	Prog. in Opt.II 131 - 180 1963
P. Jacquinot	"Apodisation" (Process of "band limiting" diffraction patterns is discussed).	Prog. in Opt.III 29 - 186 1963

1962

A. Marechal	"Filtering of Optical Images" (Presentation of some techniques for refining a defocused image).	Symp. on: Comm. & Inf. Theory Asp. of Mod.Opt. 41 - 50 1962

Filtering (Spatial Frequency)

1961

D. H. Kelly	"Image-processing experiments" (Technique is proposed for generalized spatial filtering with large, incoherent sources using the photographic Herschel effect).	J. Opt. Soc. Am. 51, 1095-1101 Oct 61
J. Tsujiuchi	"Restitution des images abberrantes par le filtrage des frequences spatiales III. Restitution de l'image prise avec un filtre a deux foyers"	Opt. Acta. 8, 161 - 168 Apr 61

1960

J. Tsujiuchi	"Restitution des images abberrantes par le filtrage des frequences spatiales II. Restitution de l'image dont le spectre comprend une partie negative"	Opt. Acta. 7, 385 - 398 Oct 60
J. Tsujiuchi	"Restitution des images abberrantes par le filtrage des frequences spatiales"	Opt. Acta. 7, 243 - 261 July 60

1956

E. L. O'Neill	"Spatial Filtering in Optics" (Comparison of incoherent & coherent image formation. Analogy of coherent imaging with correlation ideas).	IRE Trans. Inf. Theory 2, 56 - 65 June 56

1954

T. P. Cheatham, Jr. A. Kohlenberg	"Optical Filters - their Equivalence to and differences from Electrical Networks"	IRE Conv. Rec. Part 4, 6 - 12 1954

Filtering (Spatial Frequency)

1953

A. Marechal P. Croce	"Un Filtre de Frequences Spatiales pour I'Amelioriation du Contrast des Images Optiques"	Co mptes Rendus de Academie des Sci. 237, 607 - 609 Sept 53

Fourier Transform

1966

H. Osterberg	"Reconstruction of Objects from their Diffraction Patterns" (Determination of object configuration from diffraction patterns by use of Fourier Transforms).	J. Opt. Soc. Am. 56, 723 - 726
E. L. Titlebaum	"A Generalization of a 2-Dimensional Fourier Transform Property for ambiguity Functions" (Relates the 2-D Fourier transform to the ambiguity function).	IEEE Trans. Inf. Theory 12, 80 - 81 Jan 66

1965

R. Barakat	"Determination of the Optical Transfer Function Directly from the Edge Spread Function" (Solution involves inversion of a Fredholm Integral of first kind).	J. Opt. Soc. Am. 55, 1217 Oct 65
D. C. Beste E. N. Leith	"An Optical Technique for simultaneous beamforming and cross-correlation"	IEEE Conv. Rec. 4, 177 - 187 1965
S. T. Fisher	"On the Fourier transformation of sampled interferograms having a small number of samples"	Appl. Opt. 4, 256 - 257 Feb 65
H. H. Hopkins	"Canonical Pupil Coordinates in Geometrical and Diffraction Image Theory" (Two postulates necessary for valid application of Fourier treatment of transfer functions to the problem of image formation: (1) isoplanatism (stationarity) and (2) Fourier transform relationship between lens aperture distribution and in image plane).	Japanese J. Appl. Phy. 4, Suppl. I, 31 - 35 1965

1965 - con't

D. H. Kelly	"Spatial Frequency, Bandwidth, and Resolution" (The concept most directly related to the size of an object or its image is not spatial frequency but bandwidth).	Appl. Optics 4, 435 - 437 Apr 65
J. E. Stewart	"Spurions spectral resolution and the spectral transfer function of monochromators" (The spectral transfer function of a monochromator is defined as the Fourier transform of the monochromator slit function. Contrast in a periodic spectrum, which is lost when the slits of the monochromator are widened sufficiently, can return with further widening of the slits).	Appl. Optics 4, 609 - 612 May 65
B. Tatian	"Method for obtaining the Transfer Function from the Edge Response Function" (Sampling theorem & fourier series is employed).	J. Opt. Soc. Am. 55, 1014-1019 Aug 65

1964

R. Barakat A. Houston	"Line Spread Function & cumulative line spread function for systems with rotational symmetry"	J. Opt. Soc. Am. 54, 768 - 773 June 64
E. Inglestam	"Nomenclature for Fourier Transforms of Spread Functions" (Recommendation of the subcommittee for Image Assessment Problems of the International Commission for Optics regarding the terminology with respect to "sine-wave response", frequency-response, etc.).	Appl. Optics 3, 96 Jan 64

1964 - con't

E. W. Marchand	"Derivation of the Point Spread Function from the Line Spread Function" (Solution by Integral Equations).	J. Opt. Soc. Am. 54, 915 - 919 July 64
K. Preston	"Use of the Fourier transformable properties of lenses for signal spectrum analysis"	Symp: Opt. & Elect. Opt. Inf. Process. 59 - 68 1964
L. W. Smith H. Osterburg	"Modulation Transfer from Lansraux's Series" (Method for calculating diffraction images for objects of radial symmetry).	J. Opt. Soc. Am. 54, 523 - 524 Apr 64

1963

W. Brouwer et al	"The role of Eikonal and Matrix methods in contrast transfer calculations"	Appl. Opt. 2, 1239 - 1246 Dec 63
E. L. O'Neill A. Walther	"The question of phase in image formation" (Discusses the possibility of retrieving phase information by taking into account the restriction that a lens must have a finite aperture).	Opt. Acta. 10, 33 - 40 Jan 63
F. D. Smith	"Optical image evaluation and the transfer function" (The significance, limitations, and advantages of the transfer function or sine wave response as applied to evaluate photographic optical systems).	Appl. Opt. 2, 335 - 350 Apr 63

1963 - con't

A. Walther	"The question of phase retrieval in optics" (Phase reconstruction studied under the constraint that the aperture of the lens be finite).	Opt. Acta. 10, 41 - 49 Jan 63

1962

J. Pastor	"Influence de la limitation de la mire sur la mesure de la fonction de modulation d'un systeme optique" (Finite aperture effect).	Opt. Acta. 9, 237 - 248 July 62

1959

N. A. Finkelstein C. H. Brumley	"Analog Fourier transformer for apodization studies" (Description of a one dimensional function generator as a Fourier-transformer).	J. Opt. Soc. Am. 49, 410 Apr 59
G. C. Higgins et al	"Validation of sine-wave analysis for photographic systems" (Stop function response of systems calculated from sine wave response).	Opt. Acta. 6, 273 - 278 July 59
J. M. Naish	"Fourier Analyser for Optical Frequency response Determination" (Determination of spatial frequency response of a lens by electro-mechanical means. The instrument is described).	Opt. Acta. 6, 152 - 157 Apr 59
R. E. Stephens	"Note on Measurement of Sine-Wave Response of Lenses"	J. Opt. Soc. Am. 49, 413 1959

1958

K. Miyamoto	"On a comparison between wave optics and geometrical optics by using Fourier analysis: I general theory"	J. Opt. Soc. Am. 48, 57 - 63 Jan 58
R. L. Lamberts	"Relation between the sinewave response and the Distribution of Energy in the Optical Immage of a Line" (Method of determining sine-wave response both theoretically and experimentally is presented).	J. Opt. Soc. Am. 48, 490 - 495 July 58

1957

W. Lukosa	"Das Auflosungsvermogen und der kontrastrichtung wiedergabe der optish - photographischen Abbildung"	Optik 14, 490 - 502 1957

1956

L. Mertz	"Optical Fourier Synthesizer" (Optical system for synthesis of signals by variation of Fourier harmonics in form of Young's interference fringes).	J. Opt. Soc. Am. 46, 548 - 551 July 56

1954

T. P. Cheatham A. Kohlenberg	"Optical Filters - Their Equivalence to and Difference from Electrical Networks"	IRE Conv. Rec. 4, 6 - 12 1954
P. Lindberg	"Measurement of Contrast transmission characteristics in optical image formation" (Lens performance determined by Fourier Transforms).	Opt. Acta. 1, 80 - 89 Sept 54

1953

P. Elias	"Optics and Communication Theory"	J. Opt. Soc. Am. 43, 229 - 232 Apr 53
H. H. Hopkins	"On the Diffraction Theory of Optical Images"	Proc. Roy. Soc. London A, 217, 408-432 May 53
J. E. Phodes	"Analysis and synthesis of Optical Images"	Am. J. Phys. 21, 337 - 343 May 53
O. H. Schade	"Fourier Treatment of Optical Processes" (Responses to Elias, et al. Complains that accurate measurements required and that sine-wave test charts unavailable).	J. Opt. Soc. Am. 43, 704 - 705 Aug 53

1952

P. Elias et al	"Fourier Treatment of Optical Processes" (Presentation of the fourier transform viewpoint of imaging).	J. Opt. Soc. Am. 42, 127 - 134 Feb 52

Fresnel Transforms

1966

J. T. Winthrop C. R. Worthington	"Convolution Formulation of Fresnel Diffraction" (Fresnel transformation presented as a spatial convolution).	J. Opt. Soc.Am. 56, 588 - 591 May 66

1965

H. Osterberg	"Rayleigh's Integral in the Near Fresnel Region" (Derivation of field distributions in the Fresnel region of an aperture).	J. Opt. Soc. Am. 55, 1467 Nov 65
J. T. Winthrop C. R. Worthington	"Theory of Fresnal Images I" (Fresnal Diffraction pattern calculated for planer periodic objects).	J. Opt. Soc. Am. 55, 373 - 381 April 65

Holography

1966

B. R. Brown A. W. Lohmann	"Complex spatial filtering with binary masks" (A computer plotter is used to "draw" a hologram. The reconstructed image is of comparable quality).	Appl. Opt. 5, 967 - 969 June 66
J. T. Carcel et al	"Simplification of Holographic Procedures" (Manufacture of holograms without massive & rigid mounts).	Appl. Opt. 5, 1199 - 1201 July 66
V. J. Corcoram et al	"Generation of a Hologram from a moving target".	Appl. Opt. 5, 668 - 669 April 66
J. B. DeVelis et al	"Image Reconstruction with Fraunhofer Holograms" (Consideration of Virtual Images).	J. Opt. Soc. Am. 56, 423 - 427 April 66
A. A. Fiesem R. J. Fedorowicz	"Recent Advances in multicolor wavefront reconstruction" (Letter).	Appl. Opt. 5, 1085 - 1086 June 66
F. S. Harris, Jr. et al	"Copying holograms" (Letter) (Good source of information on films).	Appl. Opt. 5, 665 - 666 April 66
C. W. Helstrom	"Image Luminance & Ray Tracing in Holography" (Image formation calculated by Fresnel-Kirchhoff diffraction theory).	J. Opt. Soc. Am. 56, 433 - 441 April 66
J. P. Kirk	"Hologram on Photochromic Glass" (Letter)	Appl. Opt. 5, 1684 - 1685 Oct 66
E. N. Leith J. Upatnieks	"The Way-Out Wonderful World of Holography"	IEEE Student J. 4, 2 - 9 March 66

1966 - con't

E. N. Leith et al	"Holographic data storage in three dimensional media" (Holographic storage of diffraction patterns in 3-D media discribed from a vector viewpoint derived from the Kirchhoff diffraction integral).	Appl. Opt. 5, 1303 - 1311 Aug 66
R. W. Meier	"Cardinal Points & the Novel Immaging Properties of a Holographic System" (Principal planes, points, and directions of holographic systems).	J. Opt. Soc. Am. 56, 219 - 223 Feb 66
J. Upatnieks et al	"Correction of Lens Aberrations by means of holograms" (Holograms, made of a wave-front from a lens with spherical aberrations in combination with the lens, serves as a corrector plate for the lens).	Appl. Opt. 5, 589 - 593 April 66

1965

Anonymous	"3-D Lasography - The Month-Old Giant"	Laser Focus 1, 10 - 15 Jan 65
W. T. Cathey, Jr.	"Three-Dimensional Wavefront Reconstruction using a Phase Hologram" (Letter) (Production of a brighter image by bleaching the hologram to nearly total transparency).	J. Opt. Soc. Am. 55, 457 Apr 65
R. P. Dooley	"X-Band Holograph" (Letter) (Reports successful employ-ment of holographic technique at X-Band).	Proc. IEEE 53, 1733 - 1735 Nov 65

Holography

1965 - con't

F. Gabler F. Hersog	"Uber die Kombination des Phasen kontrast verfahrens mit der Fluoreszenz mikroskopie"	Appl. Opt. 4, 469 - 472 April 65
W. E. Kock	"Some curious properties of holograms" (Reports unexpected results of rotation about the three axes of the hologram).	Proc. IEEE 53, 1787(Letter) Nov 65
E. N. Leith et al	"Microscopy by Wavefront Reconstruction" (An analysis of aberrations).	J. Opt. Soc. Am. 55, 981 - 986 Aug 65
E. N. Leith J. Upatnieks	"Photography by Laser"	Scientific Am. 212, 24 - 35 June 65
E. N. Leith J. Upatnieks	"Microscopy by Wavefront Reconstruction" (Letter) (Report of experimental results).	J. Opt. Soc. Am. 55, 569 - 570 May 65
E. N. Leith J. Upatnieks	"Imagery with Coherent Optics" (Paper presented at 9th SPIE Technical Symp., 27 Aug 64, Miami Beach, Fla.).	SPIE - Journal 3, 123-126 Apr-May 65
R. W. Meier	"Magnification and Third-Order Aberrations in Holography"	J. Opt. Soc. Am. 55, 987 - 992 Aug. 65
A. K. Rigler	"Wavefront Reconstruction by Reflection" (Letter) (Results of aluminizing the emulsion side of the hologram).	J. Opt. Soc. Am. 55, 1693 Dec. 65
G. W. Stroke et al	"Three-Dimensional Holography with Lensless Fourier Transform Holograms and Coarse P/N Polaroid Film" (Advantages of Fourier vs. Fresnel Holograms).	J. Opt. Soc. Am. 55, 1327 Oct 65

1965 - con't

G. W. Stroke	"Lensless Photography"	Internat'l Sci. & Tech. No. 41, 52-60 May 65

1964

E. N. Leith J. Upatnicks	"Wave Front Reconstruction with Diffused Illumination and three-dimensional objects" (Discussion of reflection & diffraction Holograms).	J. Opt. Soc. Am. 54, 1295-1301 Nov 64
G. W. Stroke	"Theoretical and experimental foundations of optical holography (wavefront reconstruction imaging)" (Identical to chapter VI of book by same author: "An introduction to coherent optics and holography").	Symp. on: Opt. & Electro-Opt. Info. Proc. Tech. 749 - 769 1964

1963

E. N. Leith J. Upatnieks	"Wavefront reconstruction with continuous tone objects"	J. Opt. Soc. Am. 53, 1377 - 1381 Dec 63
J. R. Meyer-Arendt	"Three-dimensional Wavefront reconstruction" (Three dimensional reconstruction is possible by means of a synthesizer which has two optic axes).	Appl. Optics 2, 409 - 410 Apr 63

1962

E. N. Leith J. Upatnieks	"Reconstructed wavefronts and communication theory" (Holography described from a communication theory viewpoint).	J. Opt. Soc. Am. 52, 1123 - 1130 Oct 62

1956

P. Kirkpatrick H. M. A. El-Sum	"Image Formation by Reconstructed Wave Fronts" (Conceptual explanation).	J. Opt. Soc. Am. 46, 825 - 831 1956

1951

D. Gabor	"Microscopy by reconstructed wavefronts: II"	Proc. Phys. Soc. London B 64, 449 - 469 June 51

1949

D. Gabor	"Microscopy by reconstructed wavefronts"	Proc.Roy.Soc. London A197, 454-490 July 49

1948

D. Gabor	"A New Microscopic Principle"	Nature, London 161, 777-779 May 48

1966

R. H. MacPhie	"The compound intensity interferometer"	IEEE Trans. on Antennas & Prop. 14, 369 - 374 May 66
A. J. Montgomery	"Two Methods of Measuring Optical Transfer Functions with an Interferometer"	J. Opt. Soc. Am. 56, 624 - 629 May 66
W. H. Steel	Two Beam Interferometry (Survey article).	Prog. in Opt. V ed E. Wolf J.Wiley & Sons 147-197 1966

1965

M. H. Horman	"An application of wavefront reconstruction to interferometry"	Appl. Optics 4, 333 - 336 Mar 65
E. Reisman P. M. Sutton	"Measurement of air temperature distributions with the Schlieren Interferometer"	Appl. Optics 4, 144 - 145 Jan 65
A. Stein T. Schultz	"Mach-Zehnder interferometer with adjustable compensation" (Letter)	Appl. Optics 4, 1510-1511 Nov 65

1964

A. J. Montgomery	"New Interferometer for the Measurement of Modulation Transfer Functions" (Experimental set up described).	J. Opt. Soc. Am. 54, 2, 191-198 Feb 64

1962

H. Mendlowitz J. A. Simpson	"On the theory of diffraction grating interferometers" (One-dimensional diffraction grating theory is developed in vector notation).	J. Opt. Soc. Am. 52, 520 - 524 May 62

Lasers

1966

A. N. Smith J. A. Armstrong	"Intensity Noise in Multimode GaAs Laser Emission"	IBM J. Research & Development 10, 225 - 232 May 66

1965

L. I. Goldfischer	"Autocorrelation Function & Power Spectral Density of Laser-Produced Speckle Patterns"	J.Opt. Soc. Am. 55, 247 - 253 March 65
T. Uchida	"Frequency spectra of He-Ne optical masers with external concave mirrors" (Spectral measurement of gaseous optical masers has been made by photomixing techniques and noise distribution measurement).	Appl. Optics 4, 129 - 131 Jan 65

1964

K. Miyamoto	"Propagation of Laser Light" (Communication aspects of leser propagation are considered).	J.Opt. Soc. Am. 54, 989 - 991 Aug 64

1965

R. O. Harger	"An analysis of recorder motion errors in optical processing" (Random motion errors in recorders are analyzed in the context of complex filter optical processors).	Appl. Optics 4, 383 - 386 Apr 65
D. A. George	"Matched Filters for Interfering Signals"	IEEE Trans. Inf. Theory 11, 153 - 154 Jan 65

1960

G. L. Turin	"An Introduction to Matched Filters" (Describes matched filters, their use, and design).	IEEE Trans. Inf. Theory 6, 311 - 329 June 60

1954

T. P. Cheatham, Jr.	"Optical Filters - Their Equivalence to & Difference from Electrical Metworks"	IRE Conv. Rec. pt. 4, 6 - 12 1954

Miscellaneous

1966

D. G. Falconer	"Optical Processing of bubble chamber photographs" (Application of the "optical computer" to reduction of bubble chamber data).	Appl. Optics 5, 1365-1369 Oct 66
K. Murata	"Instruments for the Measuring of Optical Transfer Functions" (Survey of the field).	Prog. in Opt. V, 199 - 245 1966
R. Tremblay A. Boivin	"Concepts and Techniques of Microwave Optics" (Diffraction theory of microwave optics, microwave optical instruments, beam waveguides, and components for mm waves).	Appl. Optics 5, 249 - 278 Feb 66

1965

H. F. Budd	"Dynamical Theory of Thermoplastic Deformation"	J. Appl. Phys. 36, 1613-1616 May 65
T. M. Chen A. VanderZiel	"Noise in cathodoluminescence lights"	IEEE Trans. on Electron Devices 12, 489 - 493 Sept 65
M. G. Cohen E. I. Gordon	"Acoustic Beam Probing Using Optical Techniques"	Bell Syst. Tech. J. 44, 693-721 Apr 65
C. S. French	"Fluorescence Spectra of Sharp Cutoff Filters" (Letter)	Appl. Optics 4, 514 Apr 65

Miscellaneous

1965 - con't

G. W. King	"Photooptical storage and processing of information" (Introductory discussion to the April 1965 issue which is completely dedicated to DDP).	Appl. Optics 4, 369-371 Apr 65
J. R. Meyer-Arendt E. P. Shettle	"Calibration of Schlieren systems" (Letter)	Appl. Optics 4, 757 June 65
W. D. Montgomery	"Reconstruction of Pictures from Scanned Records" (Necessary conditions for reconstruction of an immage from a sampling lattice).	IEEE Trans. Inf. Theory 11, 204-206 Apr 65
R. Papoular	"Impendance matching in the optical wave band" (Letter) (Theoretical discussion of an optical equivalent to a double stub transformer or an E-H tuner).	Appl. Optics 4, 139 - 140 Jan 65
C. P. Saylor	"A Study of Errors in the Measurement of Microscopic Spheres"	Appl. Optics 4, 477 - 486 Apr 65
S. Twomey H. B. Howell	"The relative merit of white and monochromatic lights for the determination of visibility by backscattering measurements"	Appl. Optics 4, 501-506 Apr 65

1964

W. H. Armistead S. D. Stookey	"Photochromic Silicate Glasses Sensitized by Silver Halides"	Science 144, 150-154 Apr 64
L. T. Cutrona	"Recent Developments in Coherent Optical Technology"	1964 Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech.

Miscellaneous

1964 - con't

R. Drougard	"Optical Transfer Properties of Fiber Bundles"	J. Opt. Soc. Am. 54, 907-914 July 64
T. H. Moore I. M. Krittman	"Sensing Characteristics of an Electrostatic Recording camera"	IEEE Trans. on Electron Devices 11, 183-190 Apr 64
K. F. Wallace	"Wideband readout of thermoplastic recordings"	1964 Symp. on: Opt. & Electro-Opt. Inf. 551-556
R. E. Williams	"The Panchromatic Principle in Optical Filtering" (Attainment of doppler information in an optical filter by color separation).	IEEE Trans. Inf. Theory 10, 227-234 July 64

1963

P. J. Cressman	"New Types of Thermoplastic Deformation" (A mechanism is proposed in which the surface tension of the thermoplastic is reduced by the presence of the surface charge).	J. Appl. Phys. 34, 2327-2330 Aug 63
R. W. Gundlach C. J. Claws	"A Cyclic Xerographic Method Based on frost deformation"	Phot.Sci. & Engin. 7, 14 1963
I. M. Krittman J. A. Inslee	"Discussions and Applications of Electrostatic Signal Recording"	RCA - Review 24, 406 - 420 Sep 63

Miscellaneous

1963 - con't

K. Miyamoto	"Wave optics and Geometrical Optics in Optical Design" (Comparison)	Prog. in Opt. I, 31 - 66 1963
R. J. Pegis	"The Modern Development of Hamiltonian Optics" (First steps of a general aberration theory).	Prog. in Opt. I, 1 - 29 1963

1962

G. Amat et al	"Optics in France" (Includes lengthy bibliography. Limited applications to ODP. In french).	Appl. Optics 1, 260-278 May 62

1961

A.C.S. Van Heel	"Modern Alignment Devices" (Survey of alignment proceedures for optical systems).	Prog. in Opt. I, 289 - 329 1961

1960

L. T. Cutrona et al	"Optical Data Processing and Filtering Systems"	IRE Trans. Inf. Theory 6, 386-400 June 60

1959

L. T. Cutrona	"Coherent Optical Data Processing"	IRE Trans. Auto. Cont. 4, 137-149 Nov 59

Miscellaneous

1959 - con't

W. E. Glenn	"Thermoplastic Recording"	J. Appl. Phys. 30, 1870-1873 Dec 59

1958

K. Miyamoto	"Comparison between wave optics and geometrical optics using Fourier Analysis. II Astigmatism, coma, spherical aberration"	J. Opt. Soc. Am. 48, 567-575 Aug 58

1953

J. E. Rhodes, Jr.	"Microscope imagery as carrier communication" (Analogy drawn in which the optical system in a microscope corresponds to a communication channel; the illuminations to a carrier; and the effect of the object on the illumination, to modulation of the carrier).	J. Opt. Soc. Am. 43, 848-852 Oct 53

1949

B. H. Billings	"The Electro-Optic Effect in Uniaxial Crystals of the Type XH_2PO_4, I Theoretical"	J. Opt. Soc. Am. 39, 797 - 801 Oct 49
B. H. Billings	"The Electro-Optical Effect in Uniaxial Crystals of the Type XH_2PO_4, II. Experimental"	J. Opt. Soc. Am. 39, 802-808 Oct 49

Modulation

1966

E. I. Gordon	"A Review of Acoustooptical Deflection and Modulation Devices"	Appl. Optics 5, 1629-1639 Oct 66
A. Korpel et al	"A television display using acoustic deflection and modulation of coherent light"	Appl. Optics 5, 1667-1676 Oct 66

1965

J. D. Armitage A. W. Lohman	"Theta Modulation in Optics" (This technique allows production at color images from black & white film. Also describes multiplex storage).	Appl. Optics 4, 399-403 Apr 65
C. F. Buhrer	"Wide-band electrooptic light modulation utilizing an asynchronous traveling wave interaction" (Modulator consisting of a periodic cylindrical waveguide containing optically active cubic electrooptic crystals. Operates from 7.5-12 GHz).	Appl. Optics 4, 545-550 May 65
B. S. Goldstein R. M. Weigand	"X-Band Modulation of GaAs Lasers"	Proc. IEEE 53, p. 195 Feb 65
C. H. Holmes et al	"The electrooptic effect in calcium pyroniobate" (Modulation at 3GHz).	Appl. Optics 4, 551 - 553 May 65
H. E. Nengebaner	"A describing function for the Modulation transfer of Xerography"	Appl. Optics 4, 453 - 459 Apr 65

Modulation

1964

G. Bret F. Gives	"Giant-Pulse Laser and Light Amplifier using Variable Transmission coefficient Glasses as Light Switches"	Appl. Phys. Letters 4, 175-176 May 64
M. DiDomenico,Jr.	"Small-Signal Analysis of Internal (Coupling Type) Modulation of Lasers" (Bandwidth less than frequency deviation of consecutive cavity modes).	J. Appl. Phys. 35, 2870-2876 Oct 64
A. Frova P. H. Handler	"Shift of Optical Absorption Edge by an Electric Field: Modulation of Light in the Space Charge Region of a Ge p - n Function" (Experimental results of 90% amplitude modulation at $\lambda = 1.56\mu$).	Appl. Phys. Letters 5, 11 - 13 July 64
S. E. Harris	"Conversion of Frequency Modulated Light to Space-Modulated Light" (Via linear dispersive media).	J. Opt. Soc. Am. 54, 1147-1151 Sep 64
D. F. Nelson F. K. Reinhart	"Light Modulation by the Electro-Optic Effect in Reverse - Biased Ga P P-N Functions" (Polarization modulation described with experimental results).	Appl. Phys. Letters 5, 148-150 Oct 64
W. Niblack E. Wolf	"Polarization Modulation and Demodulation of Light"	Appl. Optics 3, 277 - 280 Feb 64

1963

X. DeAngelis W. Niblack	"Electro-Optic Interference Filter Light Modulator" (Potassium dihydrogen phosphate allowing 50% intensity modulation of incident light).	Proc. IEEE 51, p. 1258 Sep 63
I. P. Kaminow T. Liu	"Propagation Characteristics of Partially Loaded Two-Conductor Transmission Lines for Broad-band Light Modulators" (Derived by consideration of a 2 dielectric transmission line).	Proc. IEEE 51, 132-137 Jan 63
C. T. Peters	"Gigacycle Bandwidth Coherent Light Traveling - Wave Phase Modulator" (Employing a transmission line type cavity requiring input power of 12 watts).	Proc. IEEE 51, 147-153 Jan 63
F. Steryer	"Push Pull' Optical Modulators and Demodulators" (Use is made of a Foster-Seeley prism to double the modulation effect of crystals).	Appl. Optics 2, 1197-1198 Nov 63

1962

M. Arm et al	"Electro-optical transfer characteristics of liquid delay-line light modulators"	IRE Conv.Rec. pt. 6, 79-89 1962
R. H. Blumenthal	"Design of a Microwave-Frequency Light Modulator" (Polarization modulation by a dihydrogen phosphate crystal excited in a microwave cavity).	Proc. IRE 50, 452-456 Apr 62

1962 - con't

L. B. Lambert	"Wideband Instantaneous spectrum analyser employing delay-line light modulation"	IRE Conv. Rec. pt. 6, 69-78 1962
T. S. Moss	"Methods of Modulating Infrared Beams" (Methods capable of 10^{10} Hz bandwidths).	Infrared Physics 2, 129-139 July 62
R. V. Pole	"Spatial Phase Modulation and Remodulation" (Describes phase to amplitude modulation schemes).	Symp. on: Comm. & Inf. Theory Asp. of Mod. Opt. 153-180 1962

1961

D. F. Holshauser et al	"Microwave Modulation of Light Using the Kerr Effect" (Kerr Cell modulation at 3 & 6 GHz with carbon disulphide).	J. Opt. Soc. Am. 51, 1360-1365 Dec 61
I. P. Kaminow	"Microwave Modulation of the Electro-Optic Effect in KH_2PO_4" (Using a two-dielectric transmission line as a model).	Phys.Rev. Letters 6, 528-530 May 61

1960

R. Williams	"Electric Field Induced Light Absorption in CdS" (Optical pass band varied by electric field).	Phys. Rev. 117, 1487-1490 Mar 60

Modulation

1955

H. Kaufman E. H. King	"Spectral Power Density Functions in Pulse Time Modulation"	IEEE Trans. Inf. Theory It-1, 40-46 Mar 55

1932

P. Debye F. Sears	"Scattering of light by supersonic waves" (i.e., compressional waves cause grating effect).	Proc. Nat'l. Acad. Sci. 18, 409-414 June 32

Optical Information & Data Processing

1966

C. W. Barnes	"Object Restoration in a Diffraction Limited Imaging System" (Formal solution).	J. Opt. Soc. Am. 56, 575 - 578 May 66
J. L. Harris	"Image Evaluation & Restoration" (Using point spread functions and their fourier equivalents).	J. Opt. Soc. Am. 56, 569-574 May 66

1965

R. O. Harger	"An Analysis of Recorder Motion Errors in Optical Processing"	Appl. Optics 4, 383-386 Apr 65
C. Y. Ho	"Optical Flux Analysis in a Cathode Ray Tube Scanner System"	Appl. Optics 4, 373-377 Apr 65
P. L. Jackson	"Diffractive Processing of Geophysical Data"	Appl. Optics 4, 419-427 Apr 65
G. W. King	"Photooptical Storage and Processing of Information"	Appl. Optics 4, 369-371 Apr 65
K. Preston, Jr.	"Computing at the speed of light" (Description of Optical Correlators, Fourier Analyzers, etc.)	Electronics 38, 72 - 83 Sep 65
F. Tuttle	"Optical aids in signal processing" (A variety of optical processing techniques are considered, compared, and discussed; particular emphasis on information storage density of film).	Appl. Optics 4, 149-155 Feb 65

1964

L. J. Cutrona	"Recent Developments in Coherent Optical Technology"	In 1964 Symp. Opt. & Electro-Opt. Info. 83-123
L. J. Cutrona	"Optical Computing Techniques"	IEEE-Spectrum 101-108 Oct 64
D. O. Smith	"Thin-Film MagnetO-Optics in Information Processing"	Sump. on: Opt. & Electro-Opt. Proc. Inf. Tech.
K. R. Wallace	"Wide Bandwidth Readout of Thermoplastic Recordings"	Symp. on: Opt. & Electro-Opt. Proc. Inf. Tech.

1963

P. J. van Heerden	"Theory of optical information storage in solids" (Three-dimensional optical storage is possible in semi-transparent colored materials. This paper develops the theory of this form of storage).	Appl. Optics 2, 393-400 Apr 63

1962

R. L. Lamberts	"Applications of Communication Theory to Optics & Photography" (Determination of spatial frequency response of lenses and films).	Symp. on: Comm. & Inf. Theory Asp. of Mod. Opt. 181-200 1962
F. M. Reza	"Some Recent Developments in Information Theory" (Entropy, Encoding, Channel capacity are discussed).	Symp. on: Comm. & Inf. Theory Asp. of Mod. Opt. 133-152 1962

Optical Information & Data Processing

1961

D. Gabor	"Light & Information" (Application of Information theory to light propagation).	Prog. in Opt. I, 109-153 1961
H. Wolter	"On Basic Analogies and Principle Differences Between Optical and Electronic Information"	Prog. in Opt. I, 155-210 1961

1960

L. J. Cutrona et al	"Optical Data Processing and Filtering Systems" (General Description)	IRE - Trans. Inf. Theory 6, 386-400 June 60
H. Gamo	"An Aspect of Information Theory in Optics" (Determination of immaging properties of coherent, partially coherent, and incoherent illumination).	IRE Conv. Rec. Part 4, 189-203 1960
K. Miyamoto	"On Gabor's expansion theorem" (To a generalization for optics of the well known sampling theorem of information theory, D. Gabor proposed an expansion theorem. A proof relating to important cases is established).	J. Opt. Soc. Am. 50, 856-858 Sep 60

1959

L. J. Cutrona et al	"Filtering Operations Using Coherent Optics"	Proc. N.E.C. 15, 262-275 Oct 59

1958

D. M. Mackay	"The Structural Information Capacity of Optical Instruments" (Information content of various rectangular apertures).	Information & Control 1, 148-152 1958

1955

L. S. G. Kovasznay H. M. Joseph	"Image Processing" (Enhancement of picture detail using laplacian of the illumination function).	Proc. IEEE 43, 560-570 May 55
E. H. Linfoot	"Information theory & optical images" (Summary of the theorietical basics of information theory and its application to image theory).	J. Opt. Soc. Am. 45, 808-819 Oct 55
M. Perrot G. Peri	"Comparaison entre la Transmission de i'Information en Optique et en Radio electricite" (Comparison of transformations existing in optics and electronics).	Opt. Acta. 2, 1-5 Apr 55
G. Toraldo di Francia	"Capacity of an Optical Channel in the Presence of Noise" (By standard information theory approach).	Opt. Acta. 2, 5-8 Apr 55

1953

P. Elias	"Optics and communication theory" (Tutorial and very general, points out parallels in two fields).	J. Opt. Soc. Am. 43, 229-232 Apr 53

1948

C. E. Shannon	"A Mathematical Theory of Communication" (Introduction to the theory).	Bell Syst. Tech. J. 27, 379-423 Oct 48 623-656 July 48

Pattern Recognition

1966

R. F. Turner	"A System for the Automatic Recognition of Moving Patterns" (By multiple scans and comparison).	IEEE Trans. Inf. Theory 12, 195-205 Apr 66

1965

J. D. Armitage A. W. Lohmann	"Character recognition by incoherent spatial filtering" (The input to a matched filter is not the unknown character, but its Fraunhofer diffraction pattern. Only binary masks are required).	Appl. Optics 4, 461-467 Apr 65
T. J. Harley	"Comments on a paper by J. D. Armitage and A. W. Lohmann" (Refers to "Character recognition by incoherent spatial filtering").	Appl. Optics 4, 1666 Dec 65
T. J. Harley L. N. Kanal	"Comment on 'Recognizing Patterns in Photographs'" (Letter) (Calls attention to early contributions).	Appl. Optics 4, 1351-1352 Oct 65
M. E. Rabedeau A. D. Bates	"Image quality requirements in optical systems for reproducing typewritten documents"	Appl. Optics 4, 439-443 Apr 65
C. K. Rushforth	"Recognizing patterns in photographs" (Recognition with assumed knowledge and classification of patterns. Optimum classification involves non-lenear processing. In two cases this reduces to correlation or matched-filter techniques).	Appl. Optics 4, 379-381 Apr 65

Pattern Recognition

1964

J. K. Hawkins C. J. Munsey	"Eulogismographic Nonlinear Optical Immage Processing for Pattern Recognition" (Use of photographic film to generate nonlinear optical systems is described).	J. Opt. Soc. Am. 54, 998-1003 Aug 64
W. S. Holmes et al	"Optical-electronic spatial filtering for pattern recognition"	Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech. 199-207
G. G. Lendaris G. L. Stanley	"An opticalogical self-organizing recognition system"	Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech. 535-550
L. G. Roberts	"Machine perception of 3-D solids"	Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech. 159-197
A Vander Lugt et al	"Character-Reading by Optical Spatial Filtering"	Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech. 125-141

1962

M. K. Hu	"Visual Pattern Recognition by Moment Invariants" (Recognition of abstract patterns by method of moments. Allowing arbitrary orientation and size).	IRE Trans. Inf. Theory 8, 179-187 Feb 62

Pattern Recognition

1962 - con't

B. Julesz	"Visual Pattern Discrimination" (On human recognition of spatial frequency patterns of abstract fields).	IRE Trans. Inf. Theory 8, 84-92 Feb 62
J. J. Leimer	"Design Factors in the Development of an optical character recognition machine" (Discussion of character recognition and IBM 1418 optical character reader).	IRE Trans. Inf. Theory 8, 167-171 Feb 62
P. M. Lewis	"The characteristic selection problem in recognition systems" (Discussion of design problem of character recognition, and presentation of a system recognizing 62 symbol alphabets).	IRE Trans. Inf. Theory 8, 171-178 Feb 62
D. McLachlan,Jr.	"The role of optics in applying correlation functions to pattern recognition"	J. Opt. Soc. Am. 52, 454-459 Apr 62

1961

L. P. Horowitz G. L. Shelton	"Pattern Recognition Using Autocorrelation" (The autocorrelation of a set of characters is determined optically).	Proc. Inst. elec. Engrs. 49, 175-185 Jan 61
J. K. Wolf J. B. Thomas	"On the recognition of signal patterns in noise" (Consideration of statistics of recognition of a 2-D pattern in noise with applications to optical matched filters).	IRE Conv. Rec. pt. 4, 155-161 1961

Photography

1966

S. Kozma	"Photographic Recording of Spatially Modulated Coherent Light" (The nonlinear effects of film on the recording of holograms and resulting distortions are presented).	J. Opt. Soc. Am. 56, 428-432 Apr 66
R. F. van Lighten	"Influence of photographic film on wavefront reconstruction. I. plane wavefront"	J. Opt. Soc. Am. 56, 1 - 9 Jan 66

1965

W. D. Drumm	"A precision Camera for microphotographing"	Appl. Optics 4, 413-417 Apr 65
C. S. McCamy	"On the information in a microphotograph"	Appl. Optics 4, 405-411 Apr 65

1963

R. Myszko	"Effect of vibration on the photographic image" (From statistical considerations, correlation function of the exposure random process subjected to vibrational spatial displacement derived. Correlation function is Fourier transform of product of square of the system transfer function, spectral density of input process, and filter function. Effect of vibration equivalent to insertion of additional spatial filter).	J. Opt. Soc. Am. 53, 935-940 Aug 63

1962

E. N. Leith	"Photographic Film as an Element of a Coherent Optical System"	Photog.Science & Engineering 6, 75-80 Mar 62

1961

R. C. Jones	"Information capacity of photographic films" (Based on Weiner Spectrum of their granularity).	J. Opt. Soc. Am. 51, 1159-1171 Nov 61
D. H. Kelly	"Systems Analysis of the Photographic process. II. Transfer function measurements"	J. Opt. Soc. Am. 51, 319-330 Mar 61

1960

L. O. Hendeberg	"Contrast transfer function of the light diffusion in photographic emulsions" (Fourier transform description of lenses and emulsions - for determination of spatial frequency response of emulsions).	Arkiv For Fysik 16, 417-456 1960
L. O. Hendelberg	"The contrast transfer of periodical structures in a photographic emulsion developed with adjacency effects" (Study of adjacency effect using transform principles).	Arkiv For Fysik 16, 457-468 1960
A. L. Ingalls	"The Effect of Film Thickness Variations on Coherent Light"	Photog.Sci. & Engineering 4, 135-140 May 60

Photography

1960 - con't

D. H. Kelly	"System Analysis of the Photographic Process. I. A Three Stage Model" (A non-linear, isotropic model is proposed to account for the micro-imaging behavior of the photographic process).	J. Opt. Soc. Am. 50, 269-276 Mar 60

1959

R. L. Lamberts	"Measurement of sine-wave response of a photographic emulsion" (Experimental determinations).	J. Opt. Soc. Am. 49, 425-428 May 59
H. J. Zweig	"Autocorrelation and granularity. Part III. Spatial frequency response of the scanning system and granularity correlation effects beyond the aperture"	J. Opt. Soc. Am. 49, 238-244 Mar 59

1957

E. Pitts A. Marriage	"Relation between granularity and autocorrelation II"	J. Opt. Soc. Am. 47, 321-326 Apr 57

1956

J. H. Altman K. F. Stultz	"Microdensitometer for photographic research" (Densiometer with resolving power of 800 lines/m.m. Design & schematic variable aperture).	Rev. Sci.Inst. 27, 1033-1036 Dec 56

1956 - con't

A. Marriage E. Pitts	"Relation between granularity and auto-correlation"	J. Opt. Soc. Am. 46, 1019-1027 Dec 56
H. J. Zweig	"Autocorrelation and Granularity. Part I. Theory" (It is shown that two equivalent functions may be obtained from a microphotometer trace - a correlogram and a power spectrum - and that both Selwyn's measure and Jones and Higgins measure or granularity are directly related to these functions).	J. Opt. Soc. Am. 46, 805-811 Oct 56
H. J. Zweig	"Auto correlation and Granularity. Part II. Results on flashed black-and-white emulsions"	J. Opt. Soc. Am. 46, 812-820 Oct 56

1955

P. Croce M. Marquet	"Determination optique du'Bruit de fond' photographique" (On the spatial spectral band pass of films or lenses).	Opt. Acta. 2, 107-108 July 55

1953

P. Fellgett	"Concerning photographic grain, signal to noise ratio and information" (Relationship between grain and autocorrelation function is developed).	J. Opt. Soc. Am. 43, 271-282 Apr 53

Sources

1966

H. R. Carlon	"A useful infrared source" (Description and empirical measurement of a cartridge heater with axial leads. λ in the range of 2.5 - 13μ).	Appl. Optics 5, 1281-1283 Aug 66

1966

S. G. McCarthy I. Roth	"Coherent Optical Processors" (Discusses optical pulse compression).	Sperry Engr. Rev. 19, 41-45 Jan 66
K. Murata	"Instruments for the measuring of optical transfer functions" (Theoretical analysis of methods based on Fourier transform (scanning), auto-correlation, and cross correlation).	Progress in Optics 5, 201-244 1966

1965

G. W. King	"Design Considerations for a Photooptical Storage Device"	Appl. Optics 4, 429-433 Apr 65

1964

A. V. Bunker	"A high data rate optical correlator with time variable coding"	Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech. 209-220
J. A. Kneisly	"Local Curvature of wavefronts in an optical system" (Wavefront shape calculated by geometrical optics).	J. Opt. Soc. Am. 54, 229-235 Feb 64
L. B. Lambert et al	"Electro-optical signal processors for phased array antennas"	Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech. 715-748

Systems

1964 - con't

E. N. Leith et al	"Coherent optical systems for data processing, spatial filtering, and wavefront reconstruction"	Symp. on: Opt. & Electro-Opt. Inf. Proc. Tech. 143-158
L. W. Smith H. Osterburg	"Effects of arbitrarily located phase errors upon contrast in the image" (A method for estimating phase error effects in an immage is presented).	J. Opt. Soc. Am. 54, 525-528 Apr 64

1962

E. Inglestam	"Linear & Nonlinear Links in Optical Image Transfer" (Description of linearities & nonlinearities present in various components of an optical immaging system).	Symp. on: Comm. & Inf. Theory Asp. of Mod. Opt. 5 - 30 1962
A. Lohmann	"Methods of Influencing the Optical Contrast Transfer of Image Forming Devices" (Survey of the field).	Symp. on: Comm. & Inf. Theory Asp. of Mod. Opt. 51- 90 1962

1958

P. Cauals-Frau M. Rosseau	"Influence de l'eclaivage partiellement coherent sur la formation des images de quelques objects etendus opaques" (Calculation of images of simple geometric objects with partially coherent illumination).	Opt. Acta. 5, 15-27 Mar 58

1958 - con't

E. H. Linfoot	"Quality Evaluations of Optical Systems" (Various measures of quality based on fourier analysis of an optical system are compared).	Opt. Acta. 5, 1-14 Mar 58

1957

E. H. Linfoot	"Immage Quality & Optical Resolution" (Proposal of structural resolving power to replace older concepts as the figure of merit for imaging systems operating on extended objects).	Opt. Acta. 4, 12-16 Mar 57

1956

J. Arsac	"Application des theories de l'approximation a l'etude des images optiques" (Figure of merits of an optical system presented as power & saturation through consideration of the system as a filter of spatial frequencies).	Opt. Acta. 3, 55-65 June 56
W. H. Steel	"The defocused immage of sinusoidal gratings" (The defocused immage of a sinusoidal grating of infinite extent is calculated in terms of incomplete Bessel Functions. Result is related to resolving power tests).	Opt. Acta. 3, 65-74 June 56

1955

P. Dumontet	"Sur la correspondance object-immage en optique" (Comparison of distortions in an optical system is made to the linear distortions created by an electrical filter. Differences are presented).	Opt. Acta. 2, 53-63 July 55
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VII. LIST OF MANUFACTURERS

I. Product Code:

Light Sources	1
Light Modulators	2
Optical Components (Lenses, etc.)	3
Optical Benches	4
Light Detectors	5
Photographic Equipment	6
Systems	7

II. Companies

Manufacturer	Products by Code
Bausch & Lomb Rochester, N. Y. 14602	3
Brinkmann Instruments Cantiague Road Westbury, N. Y. 11590	3, 4
Burke & James, Inc. 333 W. Lake St. Chicago, Ill. 60606	3, 4, 5, 6
Conductron Corporation Dept. 6500 3475 Plymouth Rd. Ann Arbor, Michigan 48107	1, 3, 4, 7
The Ealing Corporation 2225 Massachusetts Ave. Cambridge, Massachusetts 02140	4
Eastman Kodak Co. Rochester, N. Y. 14650	3, 5, 6
Electro Optics Associates 981 Commercial Street Palo Alto, California 94303	1, 5
Ferson Optics, Inc. 2006 Government St. Ocean Springs, Miss.	3, 5
Fish-Schurman, Corp. 70 Portman Road New Rochelle, N. Y.	1, 3

Manufacturer	Products by Code
Gaertner Scientific Corp. 1201 Wright Wood Ave. Chicago, Ill. 60614	1, 3, 4, 5
Gamma Scientific, Inc. 5841 Mission Gorge Road San Diego, California 92120	1, 5
Herron Optical Co. 9117 S. Main St. Los Angeles, California 90003	3
Isomet Corporation 433 Commercial Ave. Palisades Park, N. J.	1, 2
Klinger Scientific Apparatus Corp. 83-45 Parsons Blvd. Jamica 32, N. Y.	4
Korad Corp. 2520 Colorado Ave. Santa Monica, California 90406	1, 5
Lear Siegler, Inc. 2320 Washtenaw Ave. Ann Arbor, Michigan	1, 3
3M Company 2501 Hudson Rd. St. Paul, Minn. 55119	2, 5, 6
Optics Technology, Inc. 901 California Ave. Palo Alto, California 94304	1, 5
PEK Labs, Inc. 825 E. Evelyn Ave. Sunnyvale, California	1
Perkin-Elmer Corporation Electro-Optical Division Norwalk, Connecticut	1, 3
Raytheon 130 Second Ave. Waltham 54, Mass.	1
Siemens & Halske Aktiengesellschaft Berlin, Germany	6

Manufacturer	Products by Code
Special Optics Cedar Grove, N. J. 07009	3
Spectra-Physics 1255 Terra Belle Ave. Mountain View, California	1, 2
Spectrolab 12484 Gladstone Ave. Sylmar, California	1
TRG Control Data Corp. Rt. 110 Melville, New York 11749	1
TRW Instruments 139 Illinois St. El Segundo, California 90245	1, 5
Whittaker Corp. Gencom Division 80 Express St. Plainview, L. I., N. Y. 11503	5